

Claims

[c1] 1. A fabrication process of a packaging substrate, comprising:
forming a first substrate layer and a second substrate layer, wherein the first substrate layer includes an opening therein;
placing the first substrate layer on a top surface of the second substrate layer in a manner that the opening exposes the top surface of the second substrate layer;
forming a fill material in the opening and solidifying the fill material;
heating and press-bonding the first and second substrate layers, wherein the fill material receives a pressure from the press-bonding;
removing the fill material; and
sintering the first and second substrate layers.

[c2] 2. The process of claim 1, wherein the first and second substrate layers are comprised of stacked ceramic green tapes that are respectively constituted of a ceramic powder, glass, and a binder.

[c3] 3. The process of claim 1, wherein the fill material is a rubber-based material.

[c4] 4. The process of claim 1, wherein the fill material is made of rubber, epoxy resin, or mixtures of high molecular weight materials and adhesive.

[c5] 5. The process of claim 1, wherein the opening in the first substrate layer is formed by laser ablation.

[c6] 6. The process of claim 1, wherein the fill material is formed under liquid form by printing or dispensing.

[c7] 7. A lamination process for forming a laminated substrate from a plurality of stacked substrate layers, wherein at least a topmost substrate layer includes an opening therein, the lamination process comprising:
forming a fill material in the opening and solidifying the fill material; and
heating and press-bonding the substrate layers, wherein the fill material receives a pressure exerted by the press-bonding.

[c8] 8. The process of claim 7, wherein the substrate layers are comprised of

stacked ceramic green tapes that are respectively constituted of a ceramic powder, glass, and a binder.

- [c9] 9. The process of claim 7, wherein the fill material is a rubber-based material.
- [c10] 10. The process of claim 7, wherein the fill material is made of rubber, epoxy resin, or mixtures of high molecular weight materials and adhesive.
- [c11] 11. The process of claim 7, wherein the fill material is formed under liquid form by printing or dispensing.
- [c12] 12. The process of claim 7, wherein the substrate layers are press-bonded between two planar pressing plates.